

RECEIVED

1645

APR 30 2002

TECH CENTER 1600/2900



ENTERED

1600

RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/895,913A

DATE: 04/18/2002

TIME: 14:48:30

Input Set : A:\06132.043002.SEQLIST.TXT

Output Set: N:\CRF3\04182002\I895913A.raw

RECEIVED

MAY 15 2002

TECH CENTER 1600/2900

RECEIVED

MAY 14 2002

TC 1700

```

4 <110> APPLICANT: Kleanthous, Harold
5     Al-Garawi, Amal
6     Miller, Charles
7     Tomb, Jean Francois
8     Oomen, Raymond P.
10 <120> TITLE OF INVENTION: Identification of Polynucleotides
11     Encoding Novel Helicobacter Polypeptides in the Helicobacter
12     Genome
14 <130> FILE REFERENCE: 06132/043002
16 <140> CURRENT APPLICATION NUMBER: US 09/895,913A
17 <141> CURRENT FILING DATE: 2001-06-29
19 <150> PRIOR APPLICATION NUMBER: US 08/881,227
20 <151> PRIOR FILING DATE: 1997-06-24
22 <160> NUMBER OF SEQ ID NOS: 368
24 <170> SOFTWARE: FastSEQ for Windows Version 4.0
26 <210> SEQ ID NO: 1
27 <211> LENGTH: 1004
28 <212> TYPE: DNA
29 <213> ORGANISM: Helicobacter pylori
31 <220> FEATURE:
32 <221> NAME/KEY: CDS
33 <222> LOCATION: (56)...(931)
35 <400> SEQUENCE: 1
36 cattaaacgc atgatttttg ctacaataat aggatttttaa ttatataaag gacaa atg   58
37                                     Met
38                                     1
40 ggc atg cca aat agg ggc gtt gtt tta tta gac ggg caa gcg cta gct   106
41 Gly Met Pro Asn Arg Gly Val Val Leu Leu Asp Gly Gln Ala Leu Ala
42         5                     10                     15
44 gat aat ata gaa aaa gat ttg aaa cat aaa atc caa ata ata acc gca   154
45 Asp Asn Ile Glu Lys Asp Leu Lys His Lys Ile Gln Ile Ile Thr Ala
46         20                     25                     30
48 caa acg cat aaa cgc ccc aaa cta gcc gtg att tta gtg ggg aaa gat   202
49 Gln Thr His Lys Arg Pro Lys Leu Ala Val Ile Leu Val Gly Lys Asp
50         35                     40                     45
52 ccc gct agt atc act tat gtc aat atg aag atc aaa gca tgc gaa agg   250
53 Pro Ala Ser Ile Thr Tyr Val Asn Met Lys Ile Lys Ala Cys Glu Arg
54 50                     55                     60                     65
56 gtg ggc atg gat ttt gac tta aaa acc ctc caa gaa aat att act gaa   298
57 Val Gly Met Asp Phe Asp Leu Lys Thr Leu Gln Glu Asn Ile Thr Glu
58         70                     75                     80
60 gcc aaa ttg cta tcc ttg att aaa gat tac aat acc gat caa aac att   346
61 Ala Lys Leu Leu Ser Leu Ile Lys Asp Tyr Asn Thr Asp Gln Asn Ile

```

RAW SEQUENCE LISTING

DATE: 04/18/2002

PATENT APPLICATION: US/09/895,913A

TIME: 14:48:30

Input Set : A:\06132.043002.SEQLIST.TXT

Output Set: N:\CRF3\04182002\I895913A.raw

```

62          85          90          95
64 tca ggc gtt tta gtc cag ctc cct ttg ccc aga cac att gat act aaa 394
65 Ser Gly Val Leu Val Gln Leu Pro Leu Pro Arg His Ile Asp Thr Lys
66          100          105          110
68 atg att tta gaa gcc att gac cca aac aaa gat gtg gat ggt ttc cac 442
69 Met Ile Leu Glu Ala Ile Asp Pro Asn Lys Asp Val Asp Gly Phe His
70          115          120          125
72 ccc ctt aat atc ggt aag ctc tgc act caa aaa gaa tcg ttt ctg cca 490
73 Pro Leu Asn Ile Gly Lys Leu Cys Thr Gln Lys Glu Ser Phe Leu Pro
74 130          135          140          145
76 gcc acc cct atg ggc gtg atg cgg ctt tta gag cat tac cat att gaa 538
77 Ala Thr Pro Met Gly Val Met Arg Leu Leu Glu His Tyr His Ile Glu
78          150          155          160
80 atc aag ggt aag gat gtg gcg att att gga gcg agc aat atc att ggc 586
81 Ile Lys Gly Lys Asp Val Ala Ile Ile Gly Ala Ser Asn Ile Ile Gly
82          165          170          175
84 aaa cct tta agc atg ctc atg cta aac gct ggg gct agc gtg agc gtg 634
85 Lys Pro Leu Ser Met Leu Met Leu Asn Ala Gly Ala Ser Val Ser Val
86          180          185          190
88 tgc cat att ttg act aaa gac att agt ttt tac acc caa aac gct gat 682
89 Cys His Ile Leu Thr Lys Asp Ile Ser Phe Tyr Thr Gln Asn Ala Asp
90          195          200          205
92 att gtc tgc gtg ggc gtg ggt aaa cct gat ttg att aaa gcg agc atg 730
93 Ile Val Cys Val Gly Val Gly Lys Pro Asp Leu Ile Lys Ala Ser Met
94 210          215          220          225
96 tta aaa aaa ggg gct gta gtg gtg gat att ggg atc aat cat ttg aac 778
97 Leu Lys Lys Gly Ala Val Val Val Asp Ile Gly Ile Asn His Leu Asn
98          230          235          240
100 gat ggg cgt atc gtg ggc gat gtg gat ttt aac aac gtg caa aaa gtc 826
101 Asp Gly Arg Ile Val Gly Asp Val Asp Phe Asn Asn Val Gln Lys Val
102          245          250          255
104 gcc ggt ttt atc acc cct gtg cct aaa ggc gtg ggg cct atg acg att 874
105 Ala Gly Phe Ile Thr Pro Val Pro Lys Gly Val Gly Pro Met Thr Ile
106          260          265          270
108 gtc tcg ctt tta gaa aac act cta atc gct ttt gaa aaa caa caa agg 922
109 Val Ser Leu Leu Glu Asn Thr Leu Ile Ala Phe Glu Lys Gln Gln Arg
110          275          280          285
112 aag gga ttt taatgaaatt tttacgctct gtttatgcat tttgctccag 971
113 Lys Gly Phe
114 290
116 ttgggtaggg acgattgtta ttgtgctggt ggt 1004
118 <210> SEQ ID NO: 2
119 <211> LENGTH: 292
120 <212> TYPE: PRT
121 <213> ORGANISM: Helicobacter pylori
123 <400> SEQUENCE: 2
124 Met Gly Met Pro Asn Arg Gly Val Val Leu Leu Asp Gly Gln Ala Leu
125 1          5          10          15
126 Ala Asp Asn Ile Glu Lys Asp Leu Lys His Lys Ile Gln Ile Ile Thr

```

RAW SEQUENCE LISTING

DATE: 04/18/2002

PATENT APPLICATION: US/09/895,913A

TIME: 14:48:30

Input Set : A:\06132.043002.SEQLIST.TXT

Output Set: N:\CRF3\04182002\I895913A.raw

```

127          20          25          30
128 Ala Gln Thr His Lys Arg Pro Lys Leu Ala Val Ile Leu Val Gly Lys
129          35          40          45
130 Asp Pro Ala Ser Ile Thr Tyr Val Asn Met Lys Ile Lys Ala Cys Glu
131          50          55          60
132 Arg Val Gly Met Asp Phe Asp Leu Lys Thr Leu Gln Glu Asn Ile Thr
133 65          70          75          80
134 Glu Ala Lys Leu Leu Ser Leu Ile Lys Asp Tyr Asn Thr Asp Gln Asn
135          85          90          95
136 Ile Ser Gly Val Leu Val Gln Leu Pro Leu Pro Arg His Ile Asp Thr
137          100         105         110
138 Lys Met Ile Leu Glu Ala Ile Asp Pro Asn Lys Asp Val Asp Gly Phe
139          115         120         125
140 His Pro Leu Asn Ile Gly Lys Leu Cys Thr Gln Lys Glu Ser Phe Leu
141          130         135         140
142 Pro Ala Thr Pro Met Gly Val Met Arg Leu Leu Glu His Tyr His Ile
143 145          150          155          160
144 Glu Ile Lys Gly Lys Asp Val Ala Ile Ile Gly Ala Ser Asn Ile Ile
145          165          170          175
146 Gly Lys Pro Leu Ser Met Leu Met Leu Asn Ala Gly Ala Ser Val Ser
147          180          185          190
148 Val Cys His Ile Leu Thr Lys Asp Ile Ser Phe Tyr Thr Gln Asn Ala
149          195          200          205
150 Asp Ile Val Cys Val Gly Val Gly Lys Pro Asp Leu Ile Lys Ala Ser
151          210          215          220
152 Met Leu Lys Lys Gly Ala Val Val Val Asp Ile Gly Ile Asn His Leu
153 225          230          235          240
154 Asn Asp Gly Arg Ile Val Gly Asp Val Asp Phe Asn Asn Val Gln Lys
155          245          250          255
156 Val Ala Gly Phe Ile Thr Pro Val Pro Lys Gly Val Gly Pro Met Thr
157          260          265          270
158 Ile Val Ser Leu Leu Glu Asn Thr Leu Ile Ala Phe Glu Lys Gln Gln
159          275          280          285
160 Arg Lys Gly Phe
161          290
164 <210> SEQ ID NO: 3
165 <211> LENGTH: 2162
166 <212> TYPE: DNA
167 <213> ORGANISM: Helicobacter pylori
169 <220> FEATURE:
170 <221> NAME/KEY: CDS
171 <222> LOCATION: (66)...(2099)
173 <400> SEQUENCE: 3
174 cccttgcttc tttttgtctt ttttaagact ttatctcttg ttaaaaaaag gttgtattaa 60
175 cgctt atg aaa tcc cta tct aat gcc ctt ttt tgc ctc ttt tta aaa ggt 110
176 Met Lys Ser Leu Ser Asn Ala Leu Phe Ser Leu Phe Leu Lys Gly
177 1 5 10 15
179 ttt tat ttc acc ttt ttt atg agc ttg ttg ttt gtg ttt aat cgt atc 158
180 Phe Tyr Phe Thr Phe Phe Met Ser Leu Leu Phe Val Phe Asn Arg Ile

```

RAW SEQUENCE LISTING

DATE: 04/18/2002

PATENT APPLICATION: US/09/895,913A

TIME: 14:48:30

Input Set : A:\06132.043002.SEQLIST.TXT

Output Set: N:\CRF3\04182002\I895913A.raw

181		20		25		30	
183	ggc ttt atc ctt tat act ggc tat tat aag cat gct tta aaa aac cct						206
184	Gly Phe Ile Leu Tyr Thr Gly Tyr Tyr Lys His Ala Leu Lys Asn Pro						
185		35		40		45	
187	gtt ttt gat gaa atc atc aaa acc cta ttc aat gga gcc aga tat gat						254
188	Val Phe Asp Glu Ile Ile Lys Thr Leu Phe Asn Gly Ala Arg Tyr Asp						
189		50		55		60	
191	aat cgt gtg gtc tca agc tta gcg att ctt ttt atc atc atc ggg tta						302
192	Asn Arg Val Val Ser Ser Leu Ala Ile Leu Phe Ile Ile Ile Gly Leu						
193		65		70		75	
195	ttg ggg tta ttt atc cct aaa cac caa acc aaa atg ctt aat att gtg						350
196	Leu Gly Leu Phe Ile Pro Lys His Gln Thr Lys Met Leu Asn Ile Val						
197	80		85		90		95
199	gcg tat ttt tct atc gct att atc ctg ttt tta aac att gca aac att						398
200	Ala Tyr Phe Ser Ile Ala Ile Ile Leu Phe Leu Asn Ile Ala Asn Ile						
201		100		105		110	
203	gtt tat tat ggt att tat ggg aat gtg ttt gat gaa aat tta ttg gaa						446
204	Val Tyr Tyr Gly Ile Tyr Gly Asn Val Phe Asp Glu Asn Leu Leu Glu						
205		115		120		125	
207	ttt ttg cat gaa gac acg ctc acg att tta aaa atg agc ggg gaa tac						494
208	Phe Leu His Glu Asp Thr Leu Thr Ile Leu Lys Met Ser Gly Glu Tyr						
209		130		135		140	
211	cct att ttt tct agt ttt tca ctc ttt tta atc ctt agc gtt tta acc						542
212	Pro Ile Phe Ser Ser Phe Ser Leu Phe Leu Ile Leu Ser Val Leu Thr						
213		145		150		155	
215	tct ttt atc tat ttc aaa ctc caa aac gac ctt ttt aaa ccc aaa aat						590
216	Ser Phe Ile Tyr Phe Lys Leu Gln Asn Asp Leu Phe Lys Pro Lys Asn						
217	160		165		170		175
219	gct tat caa gcc gcc cac acc aaa ccc ctt aaa act ttc att tta ttt						638
220	Ala Tyr Gln Ala Ala His Thr Lys Pro Leu Lys Thr Phe Ile Leu Phe						
221		180		185		190	
223	gcg ctt ttt tcc ctc aca caa atg ttt tac att aac gcg caa ttg agt						686
224	Ala Leu Phe Ser Leu Thr Gln Met Phe Tyr Ile Asn Ala Gln Leu Ser						
225		195		200		205	
227	ttt gtg ggc gcg tct tta gat ctc agc ata gag cca gcc aaa gat cct						734
228	Phe Val Gly Ala Ser Leu Asp Leu Ser Ile Glu Pro Ala Lys Asp Pro						
229		210		215		220	
231	ttt tta atg aaa att acc ccc gga gcg ttt cgc aac ctt tat ctt tta						782
232	Phe Leu Met Lys Ile Thr Pro Gly Ala Phe Arg Asn Leu Tyr Leu Leu						
233		225		230		235	
235	gca cgc aat tac aga caa agc cat aac ctt aaa ttc agc gat ttt gct						830
236	Ala Arg Asn Tyr Arg Gln Ser His Asn Leu Lys Phe Ser Asp Phe Ala						
237	240		245		250		255
239	aaa gaa acg cct tta gaa gtg gcg aaa aat tat ttc cat ctt aaa gag						878
240	Lys Glu Thr Pro Leu Glu Val Ala Lys Asn Tyr Phe His Leu Lys Glu						
241		260		265		270	
243	aac cct tca aac aac ctc tat gag ttg cta act cag aca agc cgc aac						926
244	Asn Pro Ser Asn Asn Leu Tyr Glu Leu Leu Thr Gln Thr Ser Arg Asn						
245		275		280		285	

RAW SEQUENCE LISTING

DATE: 04/18/2002

PATENT APPLICATION: US/09/895,913A

TIME: 14:48:30

Input Set : A:\06132.043002.SEQLIST.TXT

Output Set: N:\CRF3\04182002\I895913A.raw

```

247 aat tcc aat caa acc att caa cat gtt ttt tat atc gtt tca gag tct 974
248 Asn Ser Asn Gln Thr Ile Gln His Val Phe Tyr Ile Val Ser Glu Ser
249      290      295      300
251 ttg agt tca tgg cat ttt gat cca aaa ttt gac gct ata ggg cta acg 1022
252 Leu Ser Ser Trp His Phe Asp Pro Lys Phe Asp Ala Ile Gly Leu Thr
253      305      310      315
255 agc gct tta caa gac ttg gtt aaa aaa gag cat gcc cac atg ctt tct 1070
256 Ser Ala Leu Gln Asp Leu Val Lys Lys Glu His Ala His Met Leu Ser
257 320      325      330      335
259 gct ttt att gaa agc gcc cca cgg acc gtt aaa agc cta gat gtc caa 1118
260 Ala Phe Ile Glu Ser Ala Pro Arg Thr Val Lys Ser Leu Asp Val Gln
261      340      345      350
263 atc aca ggc tta ccc tat atc aat gat aat aac tta gtc aat tca ggg 1166
264 Ile Thr Gly Leu Pro Tyr Ile Asn Asp Asn Asn Leu Val Asn Ser Gly
265      355      360      365
267 gtg atc ctc cct agc ttt cct atg gcg att ggc aat atc aca aaa act 1214
268 Val Ile Leu Pro Ser Phe Pro Met Ala Ile Gly Asn Ile Thr Lys Thr
269      370      375      380
271 ctg ggt tat aaa aac aac ttt tat tat ggg ggt agc ggg att tgg aac 1262
272 Leu Gly Tyr Lys Asn Asn Phe Tyr Tyr Gly Gly Ser Gly Ile Trp Asn
273      385      390      395
275 aaa ctc act agt ttc acc aaa aaa caa ggt ttt cac gcc ctt tat ttc 1310
276 Lys Leu Thr Ser Phe Thr Lys Lys Gln Gly Phe His Ala Leu Tyr Phe
277 400      405      410      415
279 aat aac cat ctc tta gaa ttt gcc caa aac aag ccc tac cct aaa ccc 1358
280 Asn Asn His Leu Leu Glu Phe Ala Gln Asn Lys Pro Tyr Pro Lys Pro
281      420      425      430
283 ata gag agc aac tgg gga gtg cat gat aat att tta ttt gac tat att 1406
284 Ile Glu Ser Asn Trp Gly Val His Asp Asn Ile Leu Phe Asp Tyr Ile
285      435      440      445
287 tta gaa aac acc aac ccc cat gaa aaa act ttc agc atg gtc atg act 1454
288 Leu Glu Asn Thr Asn Pro His Glu Lys Thr Phe Ser Met Val Met Thr
289      450      455      460
291 tta agc aac cat gcg atc aaa aac gtg aat ctc aaa gcc ttt ggc gtg 1502
292 Leu Ser Asn His Ala Ile Lys Asn Val Asn Leu Lys Ala Phe Gly Val
293      465      470      475
295 cct tta gaa aaa atc caa caa ttt gtg gaa aaa acc ccc aaa tca gaa 1550
296 Pro Leu Glu Lys Ile Gln Gln Phe Val Glu Lys Thr Pro Lys Ser Glu
297 480      485      490      495
299 aat tta ccg gac gct aat tct tta ggg cat att tac tgg tat gac aaa 1598
300 Asn Leu Pro Asp Ala Asn Ser Leu Gly His Ile Tyr Trp Tyr Asp Lys
301      500      505      510
303 gta atc gtc agt ttc atc aaa aaa gcc agc caa aaa ttc cct aac tcg 1646
304 Val Ile Val Ser Phe Ile Lys Lys Ala Ser Gln Lys Phe Pro Asn Ser
305      515      520      525
307 ctt ttt atc atc aca ggg gat cat ttt gac agg agc tat gaa tac gct 1694
308 Leu Phe Ile Ile Thr Gly Asp His Phe Asp Arg Ser Tyr Glu Tyr Ala
309      530      535      540
311 aaa aac gat ttg tat atc att aaa tcc gtg ccg ctt att tta tat gcc 1742

```

RAW SEQUENCE LISTING ERROR SUMMARY
PATENT APPLICATION: US/09/895,913A

DATE: 04/18/2002
TIME: 14:48:31

Input Set : A:\06132.043002.SEQLIST.TXT
Output Set: N:\CRF3\04182002\I895913A.raw

Please Note:

Use of n and/or Xaa have been detected in the Sequence Listing. Please review the Sequence Listing to ensure that a corresponding explanation is presented in the <220> to <223> fields of each sequence which presents at least one n or Xaa.

Seq#:13; Xaa Pos. 187
Seq#:14; Xaa Pos. 187
Seq#:33; N Pos. 976
Seq#:33; Xaa Pos. 309
Seq#:34; Xaa Pos. 309
Seq#:41; N Pos. 43
Seq#:59; N Pos. 331
Seq#:85; N Pos. 43
Seq#:146; Xaa Pos. 156
Seq#:307; N Pos. 71
Seq#:317; N Pos. 116
Seq#:317; Xaa Pos. 22
Seq#:318; Xaa Pos. 22
Seq#:361; N Pos. 738
Seq#:362; Xaa Pos. 224

VERIFICATION SUMMARY

DATE: 04/18/2002

PATENT APPLICATION: US/09/895,913A

TIME: 14:48:31

Input Set : A:\06132.043002.SEQLIST.TXT

Output Set: N:\CRF3\04182002\I895913A.raw

L:1886 M:258 W: Mandatory Feature missing, <223> not found for SEQ ID#:13
L:1886 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:13 after pos.:690
L:1925 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:14 after pos.:176
L:3096 M:258 W: Mandatory Feature missing, <220> not found for SEQ ID#:33
L:3177 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:33 after pos.:968
L:3178 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:33 after pos.:1016
L:3268 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:34 after pos.:304
L:3565 M:258 W: Mandatory Feature missing, <220> not found for SEQ ID#:41
L:3566 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:41 after pos.:0
L:4638 M:258 W: Mandatory Feature missing, <220> not found for SEQ ID#:59
L:4660 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:59 after pos.:310
L:5937 M:258 W: Mandatory Feature missing, <220> not found for SEQ ID#:85
L:5938 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:85 after pos.:0
L:10191 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:146 after pos.:144
L:21688 M:258 W: Mandatory Feature missing, <220> not found for SEQ ID#:307
L:21690 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:307 after pos.:60
L:22087 M:258 W: Mandatory Feature missing, <220> not found for SEQ ID#:317
L:22096 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:317 after pos.:104
L:22097 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:317 after pos.:152
L:22183 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:318 after pos.:16
L:25506 M:258 W: Mandatory Feature missing, <220> not found for SEQ ID#:361
L:25564 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:361 after pos.:732
L:25607 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:362 after pos.:208